

Bellwork: 4/29/13

Simplify the following expressions: FOIL

1) $(4-3\sqrt{5}) - (2+\sqrt{6})$

$$4-3\sqrt{5}-2-\sqrt{6}$$

$$\boxed{2-3\sqrt{5}-\sqrt{6}}$$

2) $(3-8\sqrt{2})(4+2\sqrt{2})$

$$12+6\sqrt{2}-32\sqrt{2}-16$$

$$\boxed{-20-26\sqrt{2}}$$

-32

22

Objective: To multiply and divide radical expressions

Product Property of Radicals:

$$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$$

Example 1: Multiply, then simplify each radical expression.

a.) $\sqrt{30} \cdot \sqrt{2}$

$$\sqrt{60} = 2\sqrt{15}$$

Factor tree for 60: 60 splits into 4 and 15. 4 splits into 2 and 2. 15 splits into 3 and 5.

b.) $5\sqrt[3]{27} \cdot \sqrt[3]{3}$

$$5\sqrt[3]{81} = 15\sqrt[3]{3}$$

Factor tree for 81: 81 splits into 9 and 9. 9 splits into 3 and 3. 3 splits into 3 and 3. Red arrow points to the 3 with the text "need 3!".

c.) $4\sqrt[3]{30} \cdot -\sqrt[3]{4}$

$$-4\sqrt[3]{120} = -8\sqrt[3]{15}$$

Factor tree for 120: 120 splits into 10 and 12. 10 splits into 2 and 5. 12 splits into 4 and 3. 4 splits into 2 and 2. Red arrow points to the 3 with the text "need 3!".

d.) $\sqrt[3]{3r^3} \cdot \sqrt[3]{-9r^3}$

$$-3r$$

Factor tree for 27: 27 splits into 9 and 3. 9 splits into 3 and 3. Red arrow points to the 3 with the text "need 3!".

e.) $-2\sqrt{12b} \cdot 3\sqrt{8b^6}$

$$-6\sqrt{96b^7} = -24b^3\sqrt{6b}$$

Factor tree for 96: 96 splits into 16 and 6. 16 splits into 4 and 4. 4 splits into 2 and 2. 6 splits into 3 and 2. Red arrow points to the 3 with the text "need 3!".

f.) $\sqrt[3]{27a^3b^3} \cdot \sqrt[3]{5a^4b^4}$

$$3ab\sqrt[3]{5a^2b^2}$$

Factor tree for 135: 135 splits into 27 and 5. 27 splits into 9 and 3. 9 splits into 3 and 3. Red arrow points to the 3 with the text "need 3!".

g.) $\sqrt[3]{16ab} \cdot \sqrt[3]{8ab^6}$

$$4b^2\sqrt[3]{2a^2b}$$

Factor tree for 128: 128 splits into 16 and 8. 16 splits into 4 and 4. 8 splits into 4 and 2. Red arrow points to the 3 with the text "need 3!".

h.) $\sqrt{3}(2\sqrt{2} - 8)$

$$2\sqrt{6} - 8\sqrt{3}$$

i.) $2\sqrt{5}(-3\sqrt{6} + 5\sqrt{5})$

$$-6\sqrt{30} + 10\sqrt{25} = -6\sqrt{30} + 50$$

Factor tree for 30: 30 splits into 6 and 5. 6 splits into 2 and 3. Factor tree for 25: 25 splits into 5 and 5. Red arrow points to the 5 with the text "need 3!".

Homework: pg 17 #1-6 and 16-24

